DEPARTMENT OF MECHANICAL ENGINEERING AND MATERIALS SCIENCE
RICE UNIVERSITY

CEVE/MECH 211: ENGINEERING MECHANICS

Ray M. Bowen
Fall 2012

Course Description: The study of equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Required for MECH, CEVE, BIOE, CHME, MSCI and maybe others.
Pre-requisites: PHYS 101, MATH 101, & MATH 102
Credits: 3

Lecture times: MWF 9:00AM – 9:50 AM

Lecture location: Herring Hall 100

Problem sessions: led by TA, time & location TBA, check OWL-Space for schedule

Instructor: Ray M. Bowen, rbowen@rice.edu, office MEB 238

Teaching Assistants:
Parker Eason, Richard.P.Eason@rice.edu, office RL 236
David Trevino Garcia, David.A.Trevino.Garcia@rice.edu, office RL 232

Normal Instructor Office Hours: MWF 10am-12am
Others: Anytime present in the office.
By appointment (Appointments are welcome.)
Note: It is always a good idea to Email before coming to the office.

Required Textbooks:
1. Riley, William F., and Leroy D. Sturges, Engineering Mechanics, Statics, Second Edition, John Wiley & Sons, Inc., 1996.
2. Riley, William F., and Leroy D. Sturges, Engineering Mechanics, Dynamics, Second Edition, John Wiley & Sons, Inc., 1996.

Important Reference Book: (The textbook for Physics 101)
1. Serway, Raymond A., and John W. Jewett, Jr., Physics for Scientists and Engineers with Modern Physics, Eighth Edition, Brooks/Cole, 2010.

Examination Schedule
Exam 1: In class, September 14, 2012
Exam 2: In class, October 15, 2012
Exam 3: In class, November 26, 2012
Final Exam: Take Home Exam

Grading Policy/Grade Determination

Three Exams	20% each
Final Exam	20%
Homework	20%

Homework Information: Typically homework assignments will be made once per week. It will be due **at the start of class** one week from the date of assignment. Each problem assigned will be graded on a scale 1-10. The homework grade for the course will be computed as a percentage of the maximum number of points possible. Late homework will be given only **one half credit**. Later homework will only be accepted for one week after the due date. Late homework will **not** be accepted when its due date coincides with an exam.

Homework must be written and submitted in a **clear and legible** fashion. Work that is judged to be illegible by the instructor and the grader will be returned with a zero grade.

Homework is intended as an educational experience, and you are encouraged to consult anyone and anything if it helps you understand the material. However, you may not consult another person's written solution to any given problem or consult solutions from past years or from the textbook publisher. In simply terms, **no copying**. It is an honor code violation.

Rice Honor System: All student conduct associated with this course must comply with the Rice Honor System. While participation in study groups is strongly recommended, the work that you submit for grading must be your own. This includes homework assignments, exams and any other relevant activities associated with this course. Information on the Rice Honor System is available at http://honor.rice.edu/

Attendance and Excused Absences: See the General Announcements 2012-2012, http://ga.rice.edu/Home.aspx?id=223.

Rice Disability Support: Any student with a disability requiring accommodations in this class is encouraged to contact the instructor outside of class. Information regarding disability accommodations and other support can be obtained http://www.dss.rice.edu/.

Course Objectives and Expected Outcomes:

- Have the ability to identify, formulate and solve problems in statics and dynamics utilizing Newton's laws of motion, free body diagrams and the appropriate analytical techniques such as vector algebra, elementary matrix algebra and calculus.
    - Be able to integrate concepts of force, moment, impulse, mass, momentum, energy and kinematics of motion when addressing problems in statics and dynamics.
    - Apply the solution techniques to particles, systems of particles and rigid bodies.
    - When solving problems be able to
        - Apply the two and three dimensional kinematic definitions for velocity and acceleration for Cartesian, polar, and intrinsic.
        - Calculate and apply the concepts of center of mass, center of gravity, centroid and moment of inertia.
- Within the study of Statics, have the ability to apply the fundamentals to the study of Trusses and Frames.
- Within the study of Dynamics, have the ability to apply the fundamentals to the study of particles, systems of particles and rigid bodies subject to friction and drag.

Disclaimer: All material presented within this syllabus is subject to minor changes as the course proceeds through the semester.